What is claimed is:

1. A spring brake actuator comprising:

a service chamber;

a spring chamber divided into a control chamber and a spring cavity; and

a valve connecting said service chamber with the spring cavity, said valve operable between an open position, in which said service chamber and the spring cavity are fluidly coupled to each other, and a closed position, said valve is biased to the open position by a force and displaceable to the closed position when a difference in pressure (DP) between said service chamber and the spring cavity exceeds the force.

2. The spring brake actuator according to claim 1 wherein the control chamber is fluidly isolated from both said service chamber and the spring cavity.

3. The spring brake actuator according to claim 1 wherein when the (DP) is at least 1 psi, the valve moves to the closed position.

4. A valve in a spring brake actuator having a service chamber and a spring chamber, the spring chamber having a control cavity and a spring cavity, the valve comprising:

a passageway connecting the service chamber with the spring cavity, said passage way having an area (A_2); and

a valve body located in said passageway and displaceable between an open and a closed position sealing off fluid communication between the service chamber and the spring cavity when said valve body is in the closed position, said valve body having a valve head with an area (A_1) that is larger than area (A_2), the valve head coacting with a pressure in said service chamber to move said valve body to the closed position.

5. The valve according to claim 4 wherein said passageway further comprises a ledge portion and said valve body further comprises a seal coacting with the ledge portion to fluidly isolate the service chamber and the spring cavity from each other when said valve body is in the closed position.

6. The valve according to claim 5 wherein the seal comprises an O-ring.

7. The valve according to claim 5 wherein said valve body further comprises a retaining portion for securely holding the seal thereon.

8. The valve according to claim 4 wherein said valve body is biased to the open position by a force and displaceable to the closed position when a difference in pressure (DP) between said service chamber and the spring cavity exceeds the force.

9. The valve according to claim 8 further comprising a spring located in said passageway and engaged with said valve body, said spring providing the force to bias said valve body to the open position.

10. The valve according to claim 8 wherein when the difference in pressure (DP) is greater than a threshold value, said valve body moves to the closed position.

11. The valve according to claim 10 wherein when the difference in pressure (DP) is greater than 1 psi, said valve body moves to the closed position.

12. The valve according to claim 8 wherein when the difference in pressure (DP) is less than a threshold value, said valve body moves to the open position.

13. The valve according to claim 4 wherein an area ratio between said valve head and said valve body is greater than 2:1.

14. The valve according to claim 4 wherein an area ratio between said valve head and said valve body is greater than 5:1.

15. The valve according to claim 4 wherein an area ratio between said valve head and said valve body is approximately 10:1.

16. A method for operating a spring brake actuator for a vehicle from a parking brake engaged position to a parking brake disengaged position, the method introducing dried and filtered air to a spring cavity to prevent damage to a power spring contained therein, comprising the steps of:

fluidly coupling a service chamber with the spring cavity through a valve that is biased open by a force;

introducing compressed air to the service chamber to generate a difference in pressure (DP) between the service chamber and the spring cavity;

closing the valve once the difference in pressure (DP) exceeds the force;

introducing compressed air into a control chamber that is fluidly isolated from both the service chamber and the spring cavity to compress the spring cavity;

releasing the compressed air from the service chamber;

opening the valve once the force exceeds the difference in pressure (DP); and

releasing compressed air in the spring cavity through the valve.

17. The method according to claim 16 wherein when the difference in pressure (DP) is greater than 1 psi, the valve moves to the closed position.

18. A method for operating a spring brake actuator for a vehicle from a parking brake disengaged position to a parking brake engaged position, the method introducing dried and filtered air to a spring cavity to prevent damage to a power spring contained therein, comprising the steps of:

fluidly coupling a service chamber with the spring cavity through a valve that is biased open by a force;

introducing compressed air to the service chamber to generate a difference in pressure (DP) between the service chamber and the spring cavity;

closing the valve once the difference in pressure (DP) exceeds the force;

exhausting compressed air from a control chamber that is fluidly isolated from both the service chamber and the spring cavity to expand the spring cavity;

releasing the compressed air from the service chamber;

opening the valve once the force exceeds the difference in pressure (DP); and

drawing air into the spring cavity to equalize the difference in pressure (DP) developed across the valve due to the expansion of the spring cavity.

19. A valve connecting a service chamber with a spring cavity of a spring brake actuator through a passageway having an area (A_2), the valve comprising:

a valve body located in said passageway and displaceable between an open and a closed position sealing off fluid communication between the service chamber and the spring cavity when said valve body is in the closed position, said valve body having a valve head with an area (A_1) that is larger than area (A_2), said valve is biased to the open position by a force (F) and displaceable to the closed position when a difference in pressure (DP) between said service chamber and the spring cavity exceeds the force.

20. The valve according to claim 19 wherein said passageway further comprises a ledge portion and said valve body further comprises a seal coacting with the ledge portion to fluidly isolate the service chamber and the spring cavity from each other when said valve body is in the closed position.

21. The valve according to claim 19 further comprising a spring located in said passageway and engaged with said valve body, said spring providing the force (F) to bias said valve body to the open position.

22. The valve according to claim 19 wherein when the difference in pressure (DP) is greater than a threshold value, said valve body moves to the closed position.

23. The valve according to claim 22 wherein when the difference in pressure (DP) is greater than 1 psi, said valve body moves to the closed position.

24. The valve according to claim 19 wherein actuation of the valve is dependant on (DP), the ratio of area (A_2) to area (A_1), and force (F).

25. The internal breathing valve according to claim 19 wherein the valve will close when: [a pressure in the service chamber (P_{108})] x (A_2) - F > [a pressure in the spring cavity (P_{112})] x (A_1).

26. The internal breathing valve according to claim 19 wherein the valve will open when: F - [a pressure in the service chamber (P_{108})] x (A_2) > [a pressure in the spring cavity (P_{112})] x (A_1).